

# SENATE RECORD VOTE ANALYSIS

104th Congress  
1st Session

Vote No. 347

August 1, 1995, 5:00 p.m.  
Page S-11078 Temp. Record

## ENERGY-WATER APPROPRIATIONS/Gas Turbine-Modular Helium Reactor

**SUBJECT:** Energy and Water Development Appropriations Bill for fiscal year 1996 . . . H.R. 1905. Bumpers amendment No. 2055.

### ACTION: AMENDMENT AGREED TO, 62-38

**SYNOPSIS:** As reported, H.R. 1905, the Energy and Water Development Appropriations Bill for fiscal year 1995, will provide \$20.557 billion in new budget authority (BA) to the Department of Defense's Civil Corp of Engineers, to the Department of the Interior's Bureau of Reclamation, to the relevant offices within the Department of Energy, and to related independent agencies and commissions.

**The Bumpers amendment** would strike \$5 million from the \$12.5 million appropriation for the Gas Turbine-Modular Helium Reactor Program and would require that the remaining \$7.5 million be used to pay for termination costs of the program.

**Those favoring** the amendment contended:

Argument 1:

The Bumpers amendment would kill the gas turbine-modular helium (GT-MHR) reactor program, which is a scientifically unsound project that has refused to die for the past several decades. To date, the Federal Government has spent \$900 million on gas-cooled reactors, and private industry has spent the same amount. All of that spending has taught us an awful lot about what does not work with this reactor design. Right now, private industry is not interested in pursuing this design; the National Academy of Sciences (NAS) has said that it is a waste of money that should be discontinued; taxpayer watchdog groups have called for its elimination; the Department of Energy has recommended that funding be stopped; the House of Representatives has zeroed it out; and the Budget Resolution recommended \$7.5 million for termination costs.

One hurdle is left. Senate appropriators included \$12.5 million in funding for it. The Bumpers amendment would cancel this

(See other side)

YEAS (62)			NAYS (38)		NOT VOTING (0)	
Republicans (26 or 48%)	Democrats (36 or 78%)		Republicans (28 or 52%)	Democrats (10 or 22%)	Republicans (0)	Democrats (0)
Abraham	Akaka	Kerrey	Ashcroft	Breaux		
Brown	Baucus	Kerry	Bennett	Byrd		
Campbell	Biden	Kohl	Bond	Ford		
Chafee	Bingaman	Lautenberg	Burns	Harkin		
Coats	Boxer	Leahy	Cochran	Heflin		
Cohen	Bradley	Levin	Craig	Hollings		
Coverdell	Bryan	Lieberman	DeWine	Inouye		
D'Amato	Bumpers	Moynihan	Dole	Johnston		
Domenici	Conrad	Murray	Faircloth	Mikulski		
Gramm	Daschle	Nunn	Frist	Moseley-Braun		
Grassley	Dodd	Pell	Gorton			
Gregg	Dorgan	Pryor	Grams			
Hatfield	Exon	Reid	Hatch			
Inhofe	Feingold	Robb	Helms			
Jeffords	Feinstein	Rockefeller	Hutchison			
Kassebaum	Glenn	Sarbanes	Kempthorne			
Mack	Graham	Simon	Kyl			
McCain	Kennedy	Wellstone	Lott			
Nickles			Lugar			
Roth			McConnell			
Simpson			Murkowski			
Smith			Packwood			
Snowe			Pressler			
Specter			Santorum			
Thomas			Shelby			
Warner			Stevens			
			Thompson			
			Thurmond			

#### EXPLANATION OF ABSENCE:

1—Official Business  
2—Necessarily Absent  
3—Illness  
4—Other

#### SYMBOLS:

AY—Announced Yea  
AN—Announced Nay  
PY—Paired Yea  
PN—Paired Nay

last-minute reprieve. If we spend money on a study now, as Senate appropriators intend, that study may lead to research and development, which will cost hundreds of millions of dollars, and then will lead to a demonstration phase which will also be costly, and will finally lead to development. Private industry would foot half the bill, but with a bill of \$5.3 billion, that still will come to \$2.6 billion that the taxpayers will have to pay. Our fear is that this unproven technology, when we are years down the road and have built a commercial reactor, still will not work. The one commercial plant that was built in the 1970s in Colorado operated for 16 years before it was shut down because it could only operate 14 percent of the time.

The great hope that is held out for this reactor is that it will burn up the world's supply of weapons-grade plutonium. According to the NAS, though, this option does not make sense. The NAS encourages the use of vitrification (mixing the plutonium with other substances and turning it into a glass) or fabrication with other nuclear fuel (after which it would be burned in a light-water reactor). Either use would be preferable because they can be done right now, whereas if we wait for the development of a GT-MHR the plutonium will have to be stored until it is completed. The great danger of plutonium is that it may fall into the wrong hands--therefore, the quicker it is destroyed the better. Storing it in the hope that a technology that no expert source believes can be made economically feasible to use would be reckless. Even if it could be made feasible, it would still be reckless, because we all know that political realities have kept power companies from building new nuclear power plants for over two decades (which greatly pleases many of us), and those realities are not going to change anytime soon.

Many of us who are supporting this amendment are not doing it because we are gung ho about cutting Federal spending. Instead, we want to prioritize spending. Cutting this program will free more funds for welfare, education, and other programs. We do not pretend to understand the scientific issues behind this amendment, but we sure understand the bottom line. On that basis, we urge the acceptance of the Bumpers amendment.

#### Argument 2:

The Federal Government does not need to be involved in energy research. Private companies will put their own money into the most promising technologies. If this technology has promise it will be funded by the private sector. If not, it should not be funded by the public sector. Frankly, we would happily do away with the Department of Energy. For now, we are delighted to vote for the Bumpers amendment, to at least get rid of one small part of it.

#### **Those opposing the amendment contended:**

Our colleagues have urged the cancellation of funding for a \$5 million study by the National Research Council of the National Academy of Sciences to see if a new gas-cooled reactor design has sufficient promise for providing cheap, environmentally sound energy, for producing tritium to meet our national defense needs, and, most importantly, for safely and permanently destroying most of the weapons-grade plutonium in the world, that it merits continued research and development. In arguing against conducting this study, our colleagues have not even once admitted that the money will be used to assess the technology. Instead, they have insisted that this is just the first step toward much larger expenditures in the future. Logically, then,, they must either think that the NAS is a corrupt organization that will automatically say the design merits promise, whether it does or not, or else their rhetoric that they think this program is a boondoggle is false.

Certainly most of what they have had to say in this debate is patently false. Despite our repeated corrections, they have persisted in describing this modular reactor design as the same type of gas-cooled modular reactor that was developed and used in the 1960s through the 1980s. That reactor design certainly had its advantages, but it was also uneconomical. The GT-MHR design, though, promises to be very economical.

The biggest advantage of any modular reactor is that it is inherently safe because of the design of the fuel. The fissionable matter is encased in little round ceramic balls smaller than BB's, instead of in large, fissionable rods. A meltdown is therefore impossible. With this design, even if all the coolant is removed, the temperature will only rise to 1,400 degrees centigrade. Fuel has been tested at 1,800 degrees centigrade without the slightest degradation. In contrast, a light-water reactor, which is the type of commercial reactor that is used in the United States, is safer than a Chernobyl-style reactor but it can still have a Three-Mile-Island-type meltdown. The biggest disadvantage of the type of modular reactor that was used in the 1970s is that it was water-cooled, and the coolant became radioactive. Radioactive coolant could not be run through a generator, so a heat exchanger had to be used. That exchanger lost so much energy that electricity could not be produced competitively.

The difference which our colleagues have obstinately refused to acknowledge with the GT-MHR is the "H." That "H" stands for helium. The proposal to get around the inefficiency of using a heat exchanger is to use helium as a coolant, which obviates the need for a heat exchanger because helium is a totally inert gas. In other words, it cannot become radioactive. Helium can be used to cool a reactor, and once that helium is heated it can be run directly through a generator without using a heat exchanger. When it comes out of the generator, the cooled helium can be cycled back to the reactor to further cool it and to pick up more heat for the generator. The designers of this reactor inform us that it will be 50 percent more efficient, making it more economical than all other existing power sources.

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In responding to our explanations, our colleagues have said that they do not understand the science but they do understand that the NAS has said that this project is a waste of money that will cost us \$5.3 billion to continue developing. The NAS has never made any such claim. The NAS was referring to continued development of the old-style modular reactor when it cited that \$5.3 billion cost. The fact of the matter is that the NAS has never evaluated the worth of the GT-MHR process. We have a letter to that effect from the NAS, but supporters of the Bumpers amendment, who have been so quick to say where the NAS stands, have shown little interest in that letter. We, though, are very interested in what the NAS thinks of this project. The reason why Senator Stevens put this item in the appropriations bill, and the reason why we support his action, is to require the NAS to evaluate this new reactor design. This bill will allow \$5 million to be spent on that study; the remaining \$7.5 million will be fenced until the study is completed. If the result of that study is that the NAS believes that research should proceed, then the remaining \$7.5 million will be spent on research. If the NAS says that research should not proceed, the remaining \$7.5 million will be used for termination costs. Frankly, we are astounded that those Senators who say that they think we should rely on the NAS's expert judgment are unwilling to let the NAS conduct a study so it can offer its expert judgment.

The main reason that many Senators advocate this study is not for the energy benefits, but for the potential national security benefits. The GT-MHR has the capability of destroying 90 percent of weapons grade plutonium 239 when used alone, and over 99 percent when used with an accelerator-driven reactor. Further, the resulting waste does not represent any disposal problem because is only mildly radioactive. Vitrification, in contrast, does not destroy anything, and burning in a light-water reactor requires reprocessing and recycling because only 20 percent of the plutonium is burned when it is run through the reactor. It may well be true that private industry is not willing to try to bring a new power plant on line through all the court challenges and media blitzes that would be raised against it, but the Federal Government, to end perhaps the greatest existing national security threat facing the United States, may well be able to build this type of reactor.

Some Senators have improperly suggested that this is "pork" spending. Senator Stevens is from Alaska, an oil-producing State that would be in direct competition with electricity produced by these reactors should they become commercially viable. Further, no nuclear interests or power plants are located in Alaska. Senator Stevens clearly is not engaging in pork-barrel spending for his State by suggesting this study--he is acting selflessly in the Nation's best interests.

One of the few statements our colleagues have gotten right is that half of the cost of developing this reactor would be paid for by private industry. What they do not know is that Russia is interested in the development of the GT-MHR, and is willing to pay a large share of the development costs. With Russia and private industry picking up most of the costs, the estimates we have seen are that the cost of developing of this reactor, should the NAS say it is advisable, will be \$350 million.

Unlike our colleagues, we are not prejudging this technology. We know the potential benefits are absolutely astronomical, both in terms of the safety of our country and in terms of developing a new, cheap, and safe power source. We are willing to spend \$5 million to find out the NAS's opinion. We therefore strongly oppose the Bumpers amendment.